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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,843	08/04/2003	Daniel Yellin	P-2654-US1	3449

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PEARL COHEN ZEDEK LATZER, LLP
1500 BROADWAY, 12TH FLOOR
NEW YORK, NY 10036

EXAMINER	
WANG, TED M	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/632,843	YELLIN ET AL.	
	Examiner	Art Unit	
	Ted M. Wang	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-10* is/are allowed.

6)☒ Claim(s) *1,3,4,11-13,15 and 16* is/are rejected.

7)☒ Claim(s) *2 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04 August 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (sheet 2 and 3 of form 1449) filed on 08/04/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 4, 11-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teder et al. (US 5,544,156) in view of Molnar (US 5,887,035).

- With regard claim 1, Teder et al. discloses a receiver comprising:

  a channel estimator (Fig.1 elements 12, 14 and 16) to generate a maximum likelihood estimate of one or more channel taps (Fig.2 and 6 and column 5 lines 8-32 and column 7 lines 19-37) from an equation involving

  a) said one or more channel taps (Fig.2 and 6 and column 5 lines 8-32 and column 7 lines 19-37),

b) a priori probabilities of transmitted symbols in one or more samples of a received signal (Fig.1 element 20 and 22 and column 3 lines 57-64), and

c) one or more noise samples (Fig.1 element 10 MF input, received signal, where the received signal is transmitted by a transmitter via a channel it is inherent that the received signal contains the noise samples),

wherein said equation is an implicit equation for said one or more channel taps (column 7 lines 1-8, where since the time – variant filter 40 of the channel estimation unit requires iterative process to vary the coefficient (tap), it is inherent that the relative equation derived via channel estimator 12, 14, and 16, is an implicit equation).

Teder et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching a channel estimator to generate a maximum likelihood estimate.

However, Molnar teaches a channel estimator to generate a maximum likelihood estimate (Abstract lines 1-13, column 1 lines 22-39, column 3 lines 18-22 and column 8 lines 61-65) in order to minimize the intersymbol interference (column 1 lines 23-24) so that the communication quality can be improved.

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an estimator to generate the maximum likelihood estimate as taught by Molnar into Teder's estimator circuit

so as to minimize the intersymbol interference so that the communication quality can be improved.

- With regard claim 3, Teder et al. further discloses wherein said channel estimator is to generate said estimate for a single samples at a time (Fig.1 element 10 output and Fig.2 Rake input, where the same sample being connected to different Rake taps (Rack tap1 – Rack tap L)).
- With regard claim 4, Teder et al. further discloses wherein said one or more channel taps correspond to one or more active fingers of a rake receiver (Fig.2 element 210 and Fig.6 element 610).
- With regard claim 11, Teder et al. further discloses a first channel estimator to generate an estimate of one or more pilot channel taps of a continuous pilot channel (Fig.1 element 12 and 16, Fig.2, and column 5 lines 9-15 and 33-52).

  All other limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 12, Teder et al. further discloses means for combining said estimate of said one or more pilot channel taps and said maximum likelihood estimate (Fig.2 element 215).
- With regard claim 13, which is a method claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

- With regard claim 15, which is a method claim related to claim 3, all limitation is contained in claim 3. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 16, which is a method claim related to claim 12, all limitation is contained in claim 12. The explanation of all the limitation is already addressed in the above paragraph.

Allowable Subject Matter

4. Claims 5-10 are allowed.

5. Claims 2 and 14 are objected to as being dependent upon an objected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 5-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the objection(s) set forth in this Office action and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an examiner's statement of reasons for allowance.

- The prior art fails to teach a channel estimator of Claim 5 that specifically comprises the following:

  -- The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. 6,034,986 and 5,544,156. The improvement comprises that

With regard claim 5, "a channel tap estimator to generate a maximum likelihood estimate of one or more channel taps using the equation

$$\hat{h}_{ML} = (1/2T) \cdot \sum^{(T)}_{(t=1)} (t)\, y(t) \cdot z(t ; \hat{h}_{ML})^*$$

Where $z(t ; \hat{h}_{ML})$ denotes a mathematical scalar process involving said a priori probability, said variance, said vector and said maximum likelihood estimate. " as recited in combination with other limitation as claimed.

Conclusion

8. Reference US 6,034,986 is cited because they are put pertinent to the channel estimation for a rake receiver. However, none of references teach detailed connection as recited in claim.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang
Examiner
Art Unit 2611

Ted M. Wang